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2009 MARTEN AND FISHER HARVEST SURVEY

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ABSTRACT

A survey was completed to determine the number of harvest tag holders who set traps for marten and fisher, the number of animals caught, the types of traps used, and the number of days spent trapping. In 2009, 1,292 furtakers obtained a harvest tag to trap marten or fisher, compared to 1,598 tag holders in 2008 (19% decline). About 32% of the tag holders set traps specifically for marten (413 trappers) and 31% set traps for fisher (398). These trappers spent about 3,114 days trapping marten, captured 341 marten, and registered 268 marten. An additional 55 marten were caught in traps of trappers targeting other species, and 17 of these non-target marten were registered. The number of trappers seeking marten declined 16%, their trapping effort declined 25%, and their effort per registered marten declined 20% between 2008 and 2009. However, the number of marten registered by all trappers did not change significantly between 2008 and 2009. An estimated 398 trappers spent about 3,773 days trapping fisher, captured 278 fisher, and registered 222 fisher. An additional 55 fisher were caught in traps of trappers targeting other species, and 10 of the non-target fisher were registered. The number of trappers seeking fisher declined 28%, their trapping effort declined 35%, and the number of fisher registered by all trappers declined 27% between 2008 and 2009. However, trapper effort per registered fisher was not significantly different between 2008 and 2009.

INTRODUCTION

The Natural Resources Commission and Department of Natural Resources (DNR) have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are important management tools used to help accomplish this

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statutory responsibility. The main objectives of this harvest survey were to determine the number of trappers who set traps for marten (*Martes americana*) and fisher (*M. pennanti*), the types of traps used, the number of days trapped, and the number of animals captured.

Efforts to restore the American marten and fisher have been successful throughout the Upper Peninsula (UP) (Williams et al. 2007). As a result, the first modern fisher trapping season was initiated in 1989, and the first modern marten trapping season was initiated in 2000.

In 2009, the marten and fisher trapping season was 15 days in the UP (December 1-15). The entire UP, except Drummond Island and the Pictured Rocks National Lakeshore, was open to marten and fisher trapping. In order to trap either marten or fisher, trappers were required to obtain a free harvest tag, in addition to a Fur Harvester License. Trappers were limited to one marten and three fisher, except no more than one fisher could be taken in Management Unit B (Figure 1). Successful trappers were required to register all fisher and marten taken by December 18, 2009. If trappers captured more animals than allowed to keep or caught animals outside of the season (incidental captures), these trappers were required to release these incidental captures alive. If these incidental captures could not be released alive, trappers were required to bring these incidental catches to a registration station. The DNRE kept incidental captures. Trappers could use body-gripping (e.g., conibear) traps and foothold traps to capture marten and fisher. Live traps were also legal if set within 150 yards of a residence or farm building.

METHODS

A questionnaire was sent to everyone who obtained a marten or fisher trapping permit in 2009 (1,292 permit holders). Trappers receiving the questionnaire were asked to report if they set traps for marten or fisher, number of days spent afield, number of marten and fisher caught and released alive, and number of marten and fisher registered (registration estimates included incidentally caught animals that were not returned to the trapper). Trappers were asked to report whether any marten and fisher captured were taken in traps set for them or taken in traps set for another species. Trappers were also asked to indicate their impression of the status of the marten and fisher populations in the county where they primarily trapped (i.e., absent, stable, increasing, or decreasing).

Although all permit holders were sent a questionnaire, not everybody returned their questionnaire. To extrapolate from the tag holders that returned their questionnaire to all people obtaining harvest tags, estimates were calculated using a stratified random sampling design that included three strata (Cochran 1977). Trappers were stratified based on the type of harvest tags obtained (i.e., marten tags [35 trappers], fisher tags [49], or both tag types [1,208]). The statewide estimate of the mean number of days required to harvest a marten and fisher was calculated using a different ratio of effort to harvest for each stratum (i.e., separate ratio estimator). The number of animals registered for each stratum was used as an auxiliary variate to improve the precision of ratio estimates.

A 95% confidence limit (CL) was calculated for each estimate. In theory, the CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Unfortunately, there are several other

possible sources of error in surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases; thus, estimates were not adjusted for these possible biases.

Statistical tests are used routinely to determine the likelihood that the differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating that the difference between the means was larger than would be expected 995 out of 1,000 times, if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during mid-January 2009, and up to two follow-up questionnaires were mailed to nonrespondents. Questionnaires were undeliverable to 25 harvest tag holders. Questionnaires were returned by 869 of 1,267 people receiving the questionnaire (69% response rate).

RESULTS AND DISCUSSION

Marten

In 2009, 1,292 trappers obtained harvest tags to trap either marten or fisher, compared to 1,598 tag holders in 2008 (19% decline). Marten harvest tags were obtained by 1,243 trappers, and fisher harvest tags were obtained by 1,257 trappers. Men obtained most of the marten and fisher harvest tags (1,233). Women obtained 57 harvest tags, and the sex of two tag holders was unknown.

About 32% of the marten and fisher tag holders set traps specifically for marten (413 trappers, Table 1). About 61 ± 3% of these trappers successfully captured at least one marten. The trappers targeting marten spent 3,114 days trapping ($\bar{x}$ = 7.5 ± 0.3 days/trapper), captured 341 marten, and registered 268 marten (Table 2). An additional 55 marten were caught in traps of trappers targeting another species, and 17 of these non-target marten were registered. Among trappers seeking marten, the greatest numbers of marten were captured in Marquette (62), Chippewa (61), and Luce (51) counties.

Between 2008 and 2009, the number of trappers targeting marten declined 16% (413 versus 491 trappers) and their trapping effort declined 25% (3,114 versus 4,169 days, Figure 2). The number of marten registered by all trappers (included trappers targeting marten and trappers that caught non-target marten) did not change significantly between 2008 and 2009 (285 versus 284 marten, Figure 2). Among trappers targeting marten, the mean number of days of effort per registered marten was 11.6 ± 0.9 days in 2009, which was significantly less (-20%) than the estimate from 2008 (14.5 days, Figure 3).

The mean number of days of effort per registered marten was correlated with the mean value of marten pelts during 2000-2009 (Pearson product moment correlation coefficient [r] = 0.72, probability of obtaining this result [P] = 0.01) (Figure 4). The correlation between trapping effort and pelt prices (r = 0.69, P = 0.03) was also significant.

Most trappers used body-gripping type traps (e.g., conibears) to capture marten (86 ± 2%), although foothold traps also were used frequently (29 ± 3%). Among trappers using body-gripping traps, the mean number of body-gripping traps set per day was 5.1 ± 0.5. Among trappers using foothold traps, the mean number of foothold traps set per day was 4.4 ± 0.6.

Thirty-eight percent of marten trappers (±3%) believed marten numbers were increasing in the county where they trapped most often, while 35 ± 3% thought marten numbers were stable, 4 ± 1% thought marten were declining, 4 ± 1% indicated marten were not present, and 19 ± 3% did not comment on the status of marten.

Fisher

About 31% of the marten and fisher tag holders set traps for fisher (398 trappers, Table 1). About 40 ± 3% of these trappers successfully captured at least one fisher. Trappers targeting fishers spent 3,773 days trapping (9.5 ± 0.4 days/trapper), captured 278 fisher, and registered 222 fisher (Table 3). An additional 55 fisher were caught in traps of trappers targeting another species, and 10 of the non-target fisher were registered. Among trappers seeking fisher, the greatest numbers of fisher were captured in Baraga (37) and Marquette (37) counties.

Between 2008 and 2009, the number of trappers targeting fisher declined 28% (398 versus 552 trappers) and their trapping effort declined 35% (3,773 versus 5,766 days, Figure 2). The number of fisher registered by all trappers (included trappers targeting fisher and trappers that caught non-target fisher) declined 27% between 2008 and 2009 (232 versus 318 fisher, Figure 2). Among trappers targeting fisher, the mean number of days of effort per registered fisher was 17.0 ± 1.5 days in 2009, which was not significantly different from the estimate for 2008 (18.2 days, Figure 3).

The mean number of days of effort per registered fisher was not significantly correlated with the mean value of fisher pelts during 1997-2009 ($r = 0.47$, $P = 0.11$; Figure 7). In contrast, the correlations between the number of trappers and pelt prices ($r = 0.66$, $P = 0.01$) and between trapping effort and pelt prices ($r = 0.64$, $P = 0.02$) were significant.

Most trappers used body-gripping traps (e.g., conibears) to capture fisher (82 ± 3%), although foothold traps also were used frequently (39 ± 3%). Among trappers using body-gripping traps, the mean number of body-gripping traps set per day was 5.5 ± 0.4 traps. Among trappers using foothold traps, the mean number of foothold traps set daily was 5.2 ± 0.5 traps.

Eighteen percent of fisher trappers (±3%) believed fisher numbers were increasing in the county where they trapped most often, while 40 ± 3% thought fisher numbers were stable, 13 ± 2% thought they were declining, 5 ± 2% indicated fisher were absent, and 24 ± 3% did not comment on the status of fisher.

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Table 1. Estimated harvest tag holders that attempted to trap marten or fisher in Michigan during 2009 season.

Species sought by tag holders	%	95% CL[a]	Total	95% CL[a]
Trapped only marten	8	1	109	14
Trapped only fisher	7	1	93	12
Trapped both marten and fisher	24	2	304	21
Trapped either marten or fisher	39	2	507	24
Trapped marten[b]	32	2	413	23
Trapped fisher[c]	31	2	398	23

[a]95% confidence limits.
[b]Sum of trappers that trapped only marten and trappers that trapped both marten and fisher.
[c]Sum of trappers that trapped only fisher and trappers that trapped both marten and fisher.

Table 2. Estimated number of trappers, trapping effort, marten captured (including all incidental catches and releases), marten released alive, and marten registered (including incidental catches) during the 2009 Michigan trapping season.

Type of trapper and county trapped	Trappers		Trapping effort (days)		Marten captured[a]		Marten released alive		Marten registered[b]	
	Total	95% CL[c]	Total	95% CL[c]	Total	95% CL[c]	Total	95% CL[c]	Total	95% CL[c]
Trappers that set traps targeting marten										
Alger	30	7	192	58	42	13	18	9	24	7
Baraga	40	9	196	51	39	10	6	3	33	8
Chippewa	96	13	567	93	61	12	7	4	54	10
Delta	16	6	153	58	7	4	0	0	7	4
Dickinson	9	4	111	50	0	0	0	0	0	0
Gogebic	22	6	228	71	11	5	0	0	11	5
Houghton	15	5	124	50	9	4	0	0	9	4
Iron	36	8	364	91	18	7	3	2	15	5
Keweenaw	3	2	28	26	3	2	0	0	3	2
Luce	50	10	261	56	51	14	15	9	36	8
Mackinac	20	6	179	61	23	11	10	8	12	5
Marquette	54	10	382	84	62	16	14	6	48	14
Menominee	7	4	73	39	0	0	0	0	0	0
Ontonagon	18	6	171	62	6	3	0	0	6	3
Schoolcraft	15	5	72	34	7	4	0	0	7	4
Unknown	3	2	10	8	1	2	0	0	1	2
Subtotal[d]	413	23	3,114	222	341	33	73	19	268	23
Trappers that captured marten in traps set to catch another species										
Alger	0	0	NA	NA	0	0	0	0	0	0
Baraga	1	2	NA	NA	3	3	0	0	3	3
Chippewa	6	3	NA	NA	7	4	6	4	1	2
Delta	0	0	NA	NA	0	0	0	0	0	0
Dickinson	0	0	NA	NA	0	0	0	0	0	0
Gogebic	1	2	NA	NA	1	2	0	0	1	2
Houghton	0	0	NA	NA	0	0	0	0	0	0
Iron	1	2	NA	NA	1	2	0	0	1	2
Keweenaw	1	1	NA	NA	2	2	0	0	2	2
Luce	9	5	NA	NA	20	11	16	10	3	2
Mackinac	3	2	NA	NA	4	4	4	4	0	0
Marquette	6	3	NA	NA	12	8	10	8	1	2
Menominee	0	0	NA	NA	0	0	0	0	0	0
Ontonagon	3	2	NA	NA	3	2	0	0	3	2
Schoolcraft	0	0	NA	NA	0	0	0	0	0	0
Unknown	0	0	NA	NA	0	0	0	0	0	0
Subtotal[d]	31	8	NA	NA	55	16	37	14	17	7
Grand total[d]	428	23	3,114	222	396	40	111	27	285	24

[a]All marten removed from traps, including all incidental catches and releases.
[b]Includes incidentally caught marten that were not returned to the trapper.
[c]95% confidence limits.
[d]Number of trappers does not add up to totals because trappers could trap in more than one county. Column totals for trapping effort and capture may not equal statewide totals because of rounding errors.

Table 3. Estimated number of trappers, trapping effort, fisher captured (including all incidental catches and releases), fisher released alive, and fisher registered (including incidental catches) by trappers during the 2009 Michigan trapping season.

Type of trapper and county trapped	Trappers		Trapping effort (days)		Fisher captured[a]		Fisher released alive		Fisher registered[b]	
	Total	95% CL[c]	Total	95% CL[c]	Total	95% CL[c]	Total	95% CL[c]	Total	95% CL[c]
Trappers that set traps targeting fisher										
Alger	19	6	129	48	13	6	3	3	10	4
Baraga	30	7	274	77	37	13	1	2	36	13
Chippewa	63	11	459	92	13	6	0	0	13	6
Delta	12	5	126	52	3	2	0	0	3	2
Dickinson	19	6	220	65	7	4	1	2	5	3
Gogebic	37	8	366	87	25	9	1	2	24	9
Houghton	22	6	219	69	22	9	3	3	19	8
Iron	39	8	407	95	31	12	10	6	21	9
Keweenaw	9	4	80	39	12	10	9	10	3	2
Luce	30	8	178	48	19	11	9	8	10	4
Mackinac	13	5	109	50	12	9	6	7	6	3
Marquette	57	10	492	98	37	12	9	5	28	10
Menominee	25	7	281	78	6	3	0	0	6	3
Ontonagon	28	7	333	89	28	11	0	0	28	11
Schoolcraft	15	5	85	34	10	6	3	3	7	4
Unknown	1	2	15	17	0	0	0	0	0	0
Subtotal[d]	398	23	3,773	257	278	35	56	18	222	26
Trappers that captured fisher in traps set to catch another species										
Alger	0	0	NA	NA	0	0	0	0	0	0
Baraga	0	0	NA	NA	6	4	0	0	0	0
Chippewa	1	2	NA	NA	1	2	1	2	0	0
Delta	0	0	NA	NA	0	0	0	0	0	0
Dickinson	1	2	NA	NA	1	2	1	2	0	0
Gogebic	3	2	NA	NA	3	2	1	2	1	2
Houghton	4	3	NA	NA	0	0	6	4	0	0
Iron	1	2	NA	NA	1	2	1	2	0	0
Keweenaw	1	2	NA	NA	1	2	1	2	0	0
Luce	9	5	NA	NA	15	10	13	8	1	2
Mackinac	6	4	NA	NA	10	7	9	6	1	2
Marquette	4	4	NA	NA	12	11	9	8	3	3
Menominee	1	2	NA	NA	1	2	0	0	1	2
Ontonagon	1	2	NA	NA	1	2	0	0	1	2
Schoolcraft	0	0	NA	NA	0	0	0	0	0	0
Unknown	0	0	NA	NA	0	0	0	0	0	0
Subtotal[d]	30	7	NA	NA	55	18	45	15	10	5
Grand total[d]	411	23	3,773	257	333	41	101	25	232	26

[a]All fisher removed from traps, including all incidental catches and releases.
[b]Includes incidentally caught fisher that were not returned to the trapper.
[c]95% confidence limits.
[d]Number of trappers does not add up to statewide total because trappers could trap in more than one county. Column totals for trapping effort and capture may not equal statewide totals because of rounding errors.

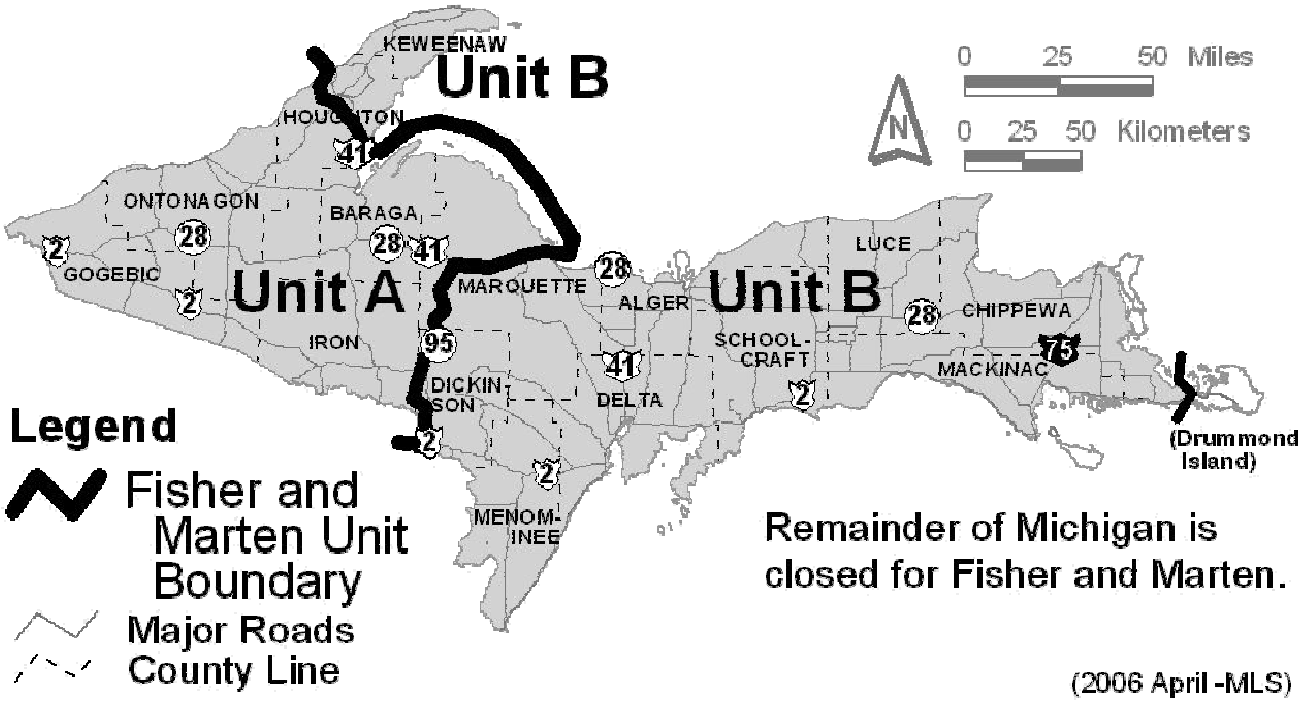

Figure 1. Marten and fisher management units in Michigan, 2009.

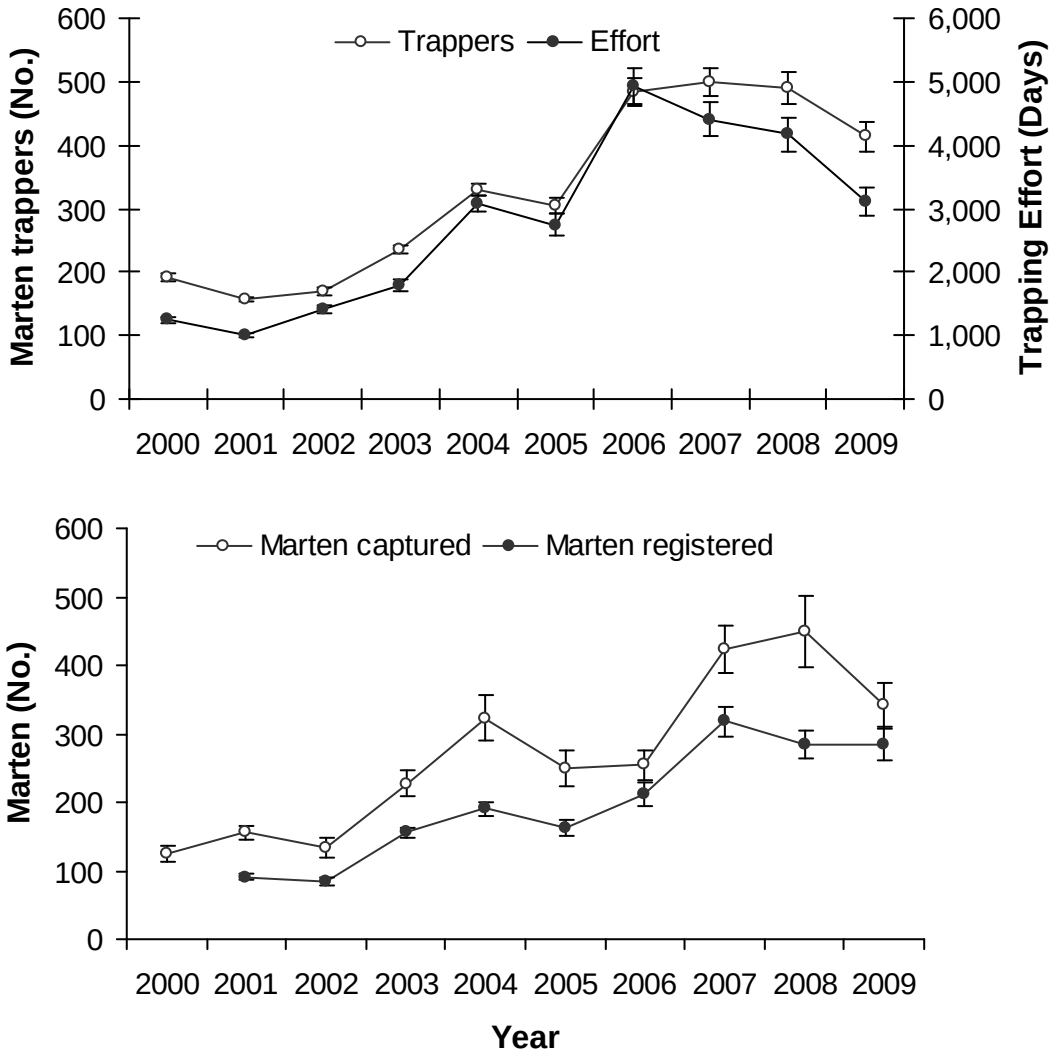

Figure 2. Estimated number of trappers, trapping effort (days), and number of marten captured and registered in Michigan, 2000-2009. Registration total was not estimated in 2000. Beginning in 2006, the estimates of marten captured and registered included incidental animals that the trapper was not allowed to keep; estimates from previous years excluded incidental animals. Estimates of trappers and effort included only trappers specifically targeting martens, but estimates of marten captured and registered included the take by all trappers (i.e., included marten taken by trappers not targeting marten).

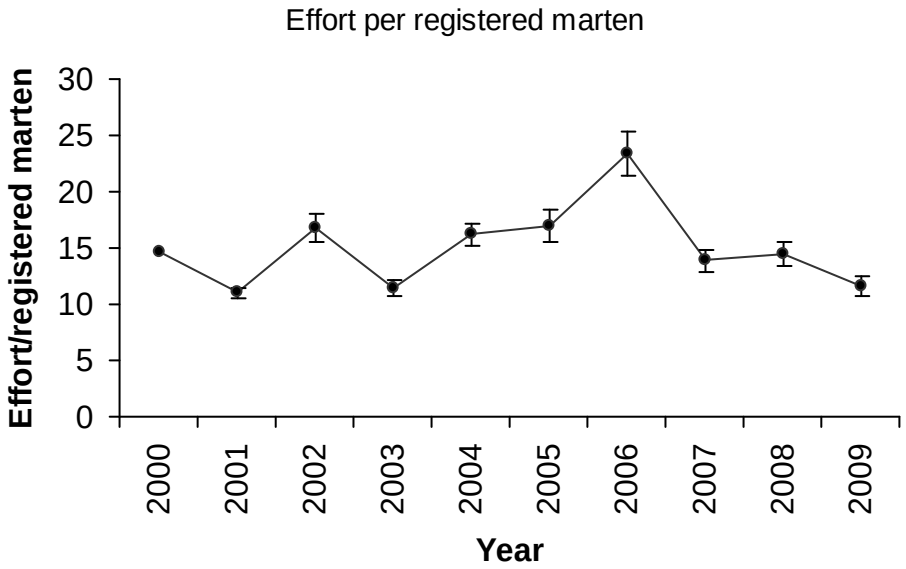

Figure 3. Estimated mean number of days required to harvest a marten in Michigan during 2000-2009. Vertical bars represent the 95% confidence interval. Estimates of effort/registered marten included only trappers targeting marten.

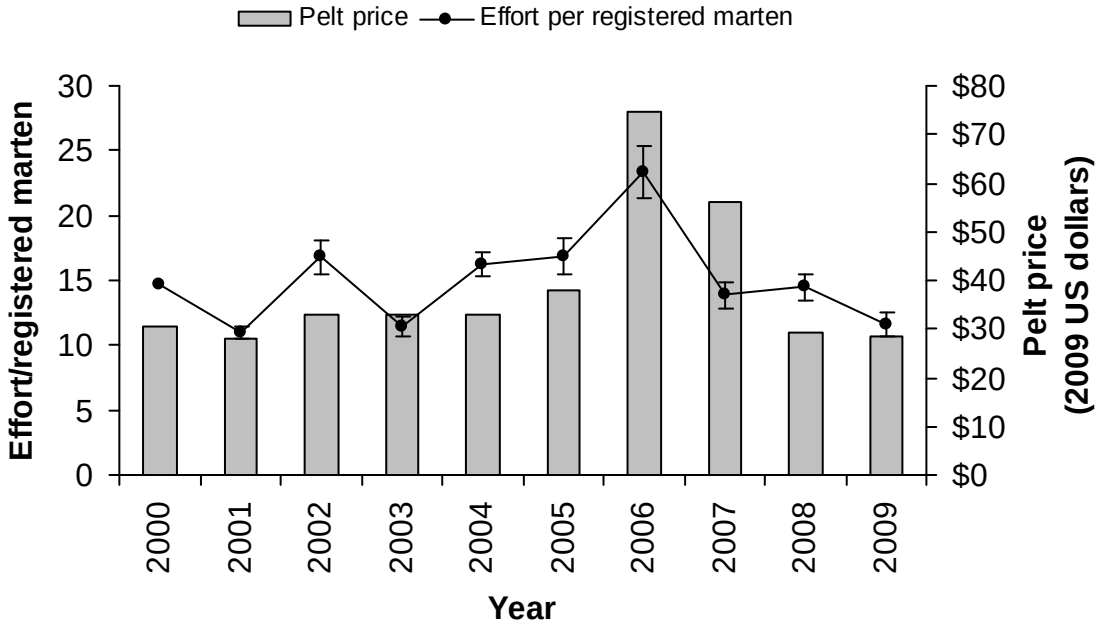

Figure 4. Estimated mean number of days required to harvest a marten in Michigan and the mean pelt value during 2000-2009. Vertical bars represent the 95% confidence interval. Pelt prices were the mean of values reported from Minnesota (Dexter 2008) and Wisconsin (Kitchell 2008). Pelt price were adjusted for inflation and reported in 2009 dollars. Estimates of effort/registered marten included only trappers targeting marten.

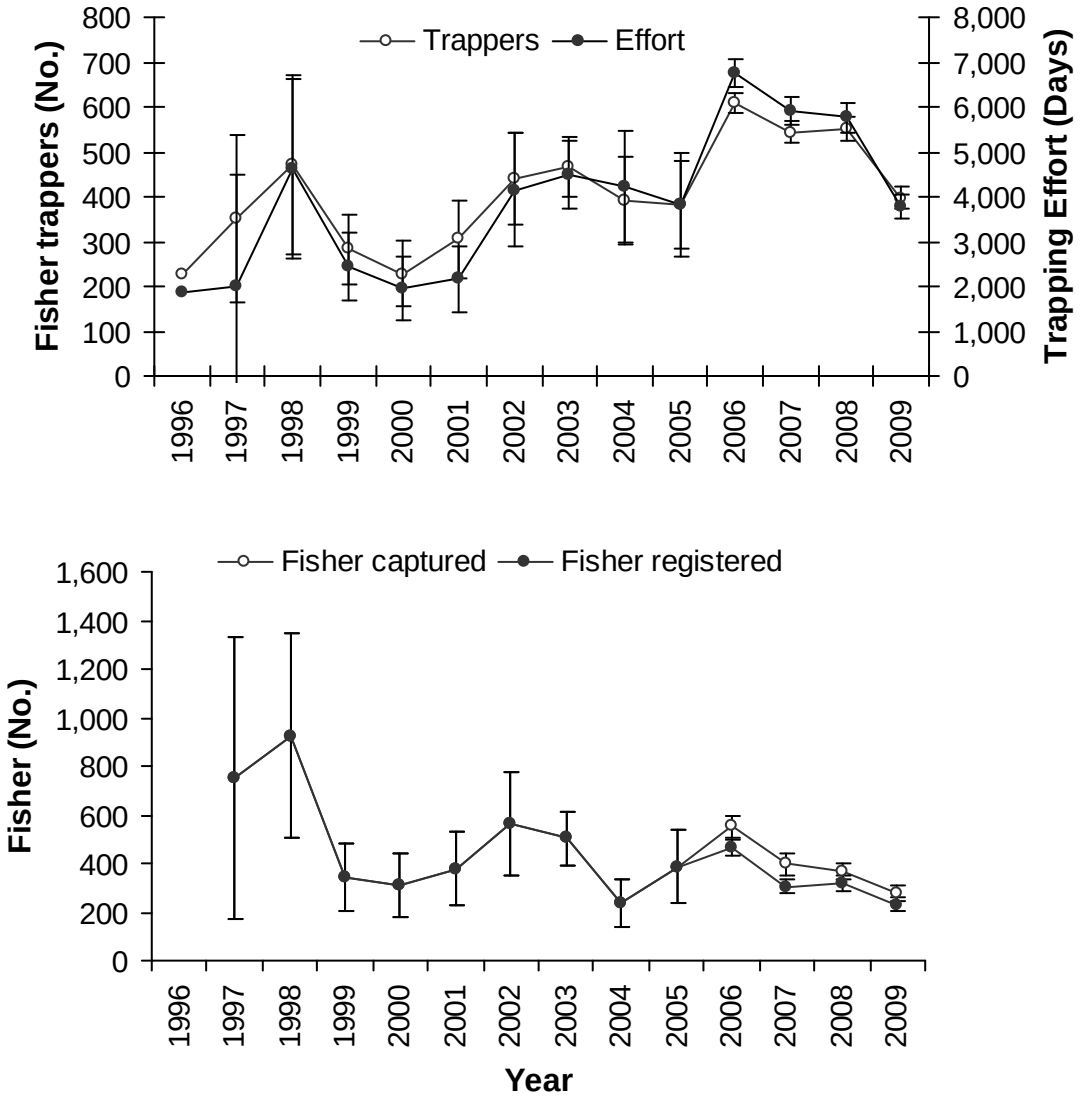

Figure 5. Estimated number of trappers, trapping effort (days), and number of fisher captured and registered in Michigan, 1996-2009. Estimates of trappers and effort included only trappers targeting fishers, but estimates of fisher captured and registered included the take by all trappers (i.e., included fisher taken by trappers not targeting fisher).

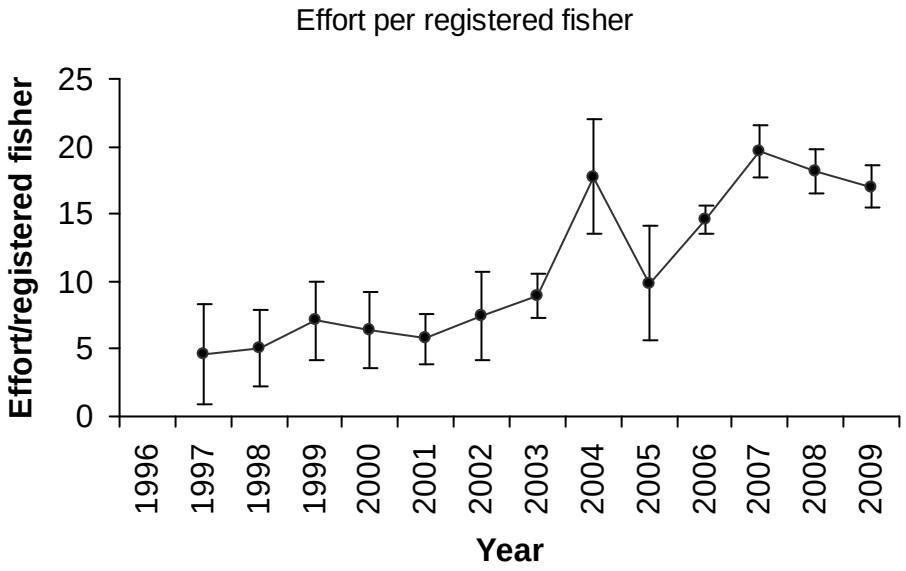

Figure 6. Estimated mean number of days required to harvest a fisher in Michigan during 1997-2009. Vertical bars represent the 95% confidence interval. Estimates of effort/registered fisher included only trappers targeting fishers.

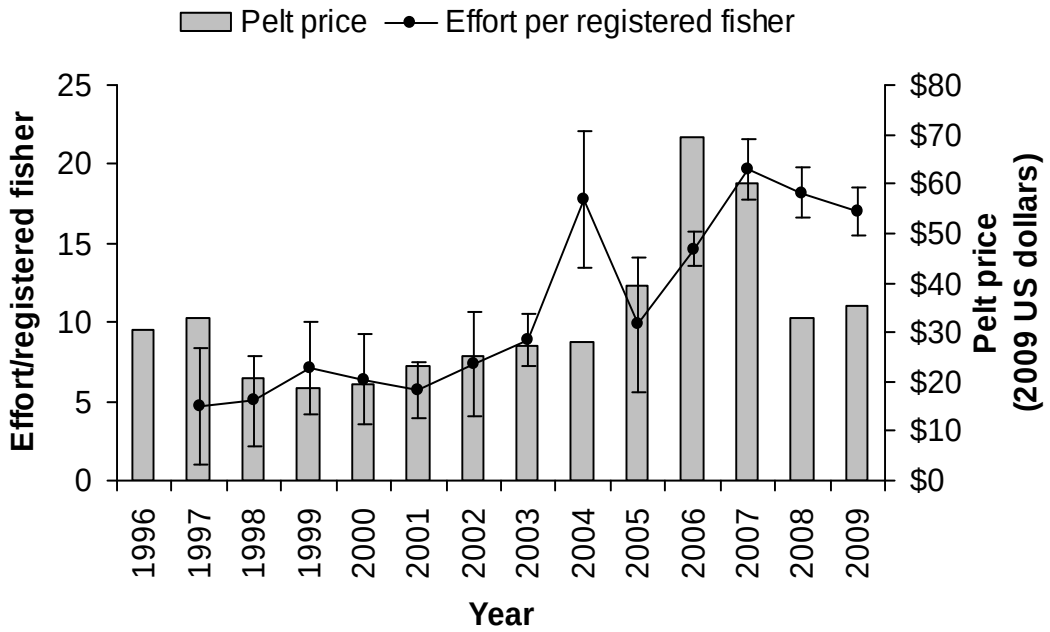

Figure 7. Estimated mean number of days required to harvest a fisher in Michigan and the mean pelt value during 1996-2009. Vertical bars represent the 95% confidence interval. Pelt prices were the mean of values reported from Minnesota (Dexter 2008) and Wisconsin (Kitchell 2008). Pelt price were adjusted for inflation and reported in 2009 dollars. Estimates of effort/registered fisher included only trappers targeting fishers.